

Evaluation of Community Pharmacists' Knowledge and its Association with their Attitude toward Dengue Control and Management

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Abstract

Background: Community pharmacists (CPs), as health-care professionals, play an important role in educating the public about dengue infection and its control and management. This study was conducted to assess the knowledge of CPs and its association with their attitude toward control and management of dengue. **Materials and Methods:** A cross-sectional study was conducted among CPs in using the convenience sampling technique. A newly developed and pre-validated research tool was self-administered to 205 respondents. To evaluate the knowledge of respondents, the scoring system was used and assessed using arbitrary cutoff points. **Results:** Of 205 respondents, 92.2% of the respondents were having the opinion that dengue is a preventable disease. The majority of respondents were able to identify the symptoms of dengue; chills (98.5%), headache (98%), pain in eyes (80%), abdominal pain (81.5%), and low backache (86.8%). Besides, 86.8% of the respondents knew that dengue infection is transmitted by the bite of *Aedes* mosquito. **Conclusion:** Although respondents showed adequate knowledge about dengue control and management, yet continuous professional development training should be frequently organized and attended to update themselves regarding the latest information that they can relay to their customers.

Key words: Community pharmacists, community pharmacists, dengue control and management, knowledge

INTRODUCTION

Dengue, which is also known as break-bone fever, is an infectious disease caused by a specific dengue virus.^[1] There are four different types of viruses that lead to dengue fever-dengue types 1, 2, 3, and 4.^[2] Dengue viruses are transmitted from the bite of an infected mosquito to human beings. *Aedes aegypti*, the principal vector of dengue infection and *Aedes albopictus* are the two major mosquitoes species that are responsible for dengue spread.^[2] Symptoms of dengue infection usually arise 2–7 days after the incubation period of 3–10 days.^[2] The symptoms of viral illness may include high fever up to 40°C, severe headache with retro-orbital pain, severe joint and muscle pain, nausea, and vomiting, as well as rashes that appear on the 3rd or 4th day.^[2]

According to the National Institute of Health of Pakistan, in 2018, approximately 15,500 cases with 17 deaths had reported just because of dengue infection.^[1,2] Unexpectedly, dengue serotype 3 was the most widespread serotype after the serotype 2. An epidemic of dengue infection (over 18500 reported cases) was reported in 2017 with few casualties.^[3,4] Dengue infection is more prevalent in areas of sanitary problems, open drains, and stagnant water. Besides, there is yet any vaccine available in the market to protect

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people against the dengue infection.^[2] Undeniably, health-care professionals could play their professional role in educating the general public in the control and management of dengue.^[5]

Community pharmacies are among the primary source of information for the general public to combat dengue infection. Besides, community pharmacists (CPs) are daily visited by different people, even those who are not motivated to use health services until they feel signs and symptoms of infection.^[6] Therefore, CPs should have complete and comprehensive knowledge about dengue control and management so they could better counsel and help their customers/patients in preventing dengue infections.

Several studies are done among health-care providers (HCPs) to assess their knowledge regarding dengue infection and its control and management. One study was carried out to determine variations in knowledge, attitude, and practices (KAP) regarding dengue management among primary care physicians in Singapore.^[7] The study revealed that physicians demonstrated adequate knowledge of dengue but moderate attitude.^[7] Another study conducted in Southern Taiwan revealed that physicians and nurses were familiar with precise dengue management but lack of knowledge in reporting time and preventive strategies.^[8] Besides, a review of the dengue knowledge among junior health workers has also conducted among primary health centers of Belgaum Taluka concluded that the majority of them did not have good knowledge of dengue management.^[9] A study conducted by Huang *et al.* also found a significant deficit in knowledge about dengue management among HCPs.^[10]

Furthermore, various other studies have assessed knowledge about dengue among communities (general public) of different countries. One study was conducted in Samar Province in the Philippines, where the study population had a higher level of knowledge about dengue management.^[11] In another study carried out to evaluate the KAP of the public in an urban slum area of a country revealed that the respondents had good knowledge about dengue infections and its management.^[12] Similar studies were also reported in the other two countries, i.e., India and Jamaica.^[13,14] However, different findings were observed in studies done in India, Malaysia, and Laos, where the respondents had a lack of knowledge regarding dengue infection and management.^[15-17]

This study aimed to evaluate the knowledge of CPs about dengue infection and the association between knowledge and their attitude.

MATERIALS AND METHODS

This cross-sectional study was conducted between August 2018 and February 2019, using a convenience sampling technique to obtain a sample of 205 CPs. Those who refused

to give informed consent in the form of written consent sheets or verbally were excluded from the study. Besides, only fully registered pharmacists were included in our data collection. The participants were required to complete the self-administered questionnaires which took about 10–15 min. The questionnaire was developed after an extensive literature review and was validated for its reliability (Cronbach's alpha=0.77). Pre-testing of the questionnaires was conducted among 20 participants and minor changes were done after pre-testing. The questionnaire was divided into two parts; the first part covered questions on sociodemographic characteristics, while the second part was related to knowledge and attitude about dengue.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 23.0. Each question was analyzed individually. The scoring system was used to assess knowledge. The correct response was given 2 points and 1 point for incorrect or do not know. The points for each of the questions were summed. Knowledge was assessed as “adequate” or “inadequate” based on arbitrary cutoff points. Respondents who scored more than 75% score were considered adequate, otherwise categorized as inadequate.^[18] Descriptive statistics such as frequency and percentage were used for analysis. In addition, the Spearman correlation coefficient was utilized to determine the relationships between dengue knowledge and attitude among CPs. $P \leq 0.05$ was considered statistically significant.

RESULTS

A total number of 205 CPs had participated in this study. Among 205 eligible participants interviewed, 62.4% were female, and Urdu-speaking participants accounted for 96.1%. The majority (74.1%) of the participants belonged to the age group of 24–34. Most of the respondents (86.8%) reported that they had not suffered from dengue before. Around 73.2% of the respondents revealed that their families were not infected with dengue before. The sociodemographic details of respondents are shown in Table 1.

Table 2 illustrates that the majority (92.2%) of the respondents believed that dengue is a preventable disease. As to symptoms, almost all respondents agreed that a person with dengue infection can develop chills (98.5%) and headache (98%). Interestingly, a minority of the respondents rejected eye pain (20%), abdominal pain (18.6%), and low backache (13.2%) as plausible signs and symptoms.

With regards to dengue treatment, 82.9% were aware that there is no specific treatment for dengue infection. Moreover, about 85.9% of respondents knew that there no proper vaccine to protect against dengue while the rest (14.1%) either did not answer correctly or did not know. More than 90% of participants felt that people who once infected with dengue still have the risk of getting dengue infection.

Table 1: Demographic characteristics of the study participants (n=205)

Characteristics	Frequency (n)	Percentage
Gender		
Male	77	37.6
Female	128	62.4
Age (in years)		
24–34	152	74.1
35–44	36	17.6
>44	17	8.3
Mother tongue		
Urdu	197	96.1
Others	8	3.9
Years of experience		
<10	142	69.3
More than 10	63	30.7
Previous experience with dengue management		
Yes	27	13.2
No	178	86.8
Previous family experience with dengue management		
Yes	55	26.8
No	150	73.2

Table 3 shows that a significant association between the statement “the rainy season is the only epidemic season for dengue infection” and the statement “fogging is the only way to prevent and to kill mosquitoes” ($P < 0.0001$). In addition, another statement: Respondents were aware that those who once got dengue infection cannot get dengue infection again: And the statement: “Respondents who believed dengue patients should be treated in isolation only” also showed a positive correlation ($P < 0.032$).

Table 4 shows the cumulative scores of the respondents about the questions on dengue knowledge. About 86.3% of the respondents possessed adequate knowledge about dengue management.

DISCUSSION

The result of this study demonstrated that there was adequate knowledge among the CPs. A high percentage of 92.2% of respondents were aware that dengue is a preventable disease. Baig *et al.* had similar findings that all of the respondents knew the fact that dengue can be prevented but difficult to manage.^[18,19] No particular drug is given but supportive therapy is often recommended like acetaminophen that can relieve some typical symptoms associated with dengue infection such as pain and high fever. On the other hand, the

Table 2: Responses to knowledge questions about dengue management

S. No.	Statements	Yes	No	Do not know
		n (%)	n (%)	n (%)
1	The principal mosquito vector for dengue infection is <i>Aedes aegypti</i>	178 (86.9)	4 (1.9)	23 (11.2)
2	Dengue infection is a disease that cannot be prevented.	16 (7.8)	189 (92.2)	-
3	Signs and symptoms			
	Chills	202 (98.5)	2 (1.0)	1 (0.5)
	Headache	201 (98)	3 (1.5)	1 (0.5)
	Pain on moving the eyes	164 (80)	39 (19)	2 (1.0)
	Abdominal pain	167 (81.5)	36 (17.6)	2 (1.0)
	Low backache	178 (86.8)	26 (12.7)	1 (0.5)
4	The rainy season is the only epidemic season for dengue infection	25 (12.2)	175 (85.4)	5 (2.4)
5	Mosquitoes transmitting dengue infection bite only during day time	18 (8.8)	170 (82.9)	17 (8.3)
6	The mosquito that transmits dengue infection lays its eggs in dirty water.	75 (37.1)	125 (61)	4 (2.0)
7	Stagnant water from old tires, trash cans, and flower pots are considered breeding places for the mosquitoes spreading dengue	204 (99.5)	-	1 (0.5)
8	Dengue viruses are transmitted to humans through bites of infective female mosquitoes	178 (86.8)	7 (3.4)	20 (9.8)
9	A person who once got dengue infection cannot get dengue infection again	8 (3.9)	187 (91.2)	10 (4.9)
10	There is a vaccine available to protect from dengue infection	7 (3.4)	176 (85.9)	22 (10.7)
11	There is no specific treatment of dengue infection	170 (82.9)	33 (16.1)	2 (1.0)

Table 3: Association between knowledge about dengue and attitude toward dengue control

S. No.	Items	Correlation coefficient	P value
1	The rainy season is the only epidemic season for dengue infection versus Fogging is enough to prevent dengue and to kill mosquitoes, no need for other ways	+0.315	0.0001*
2	A person who once got dengue infection cannot get dengue infection again versus Dengue patients should be treated in isolation only	+0.147	0.032*

* $P < 0.05$ was considered as significant

Table 4: Cumulative responses to knowledge about dengue

Knowledge scores	Frequency (n)	Percentage
Inadequate	28	13.7
Adequate	177	86.3

majority of the strong pain relievers (strong analgesics) are often avoided due to their less safety profile among dengue infected patients. Supportive therapy is always considered as the first choice among physicians to manage dengue fever, like electrolyte replacement therapies, avoiding dehydration along with counseling about avoiding places having endemics of dengue outbreaks, use of mosquito repellents, and wearing complete clothes, and using mosquito nets.^[20,21]

The current study revealed that CPs had considerable good knowledge about signs and symptoms of the disease which was also observed in similar studies done in Taiwan, India, and Malaysia.^[5,10,19] Contrary findings were present in another research in which less percentage of respondents were able to identify typical symptoms of dengue; fever (49.5%), rashes (34%), and muscle pain (2.1%).^[14] The ability to recognize the sign and symptoms associated with dengue infection was important to avoid the delay of dengue treatment which could lead to further complications.

A total of 178 respondents knew that dengue viruses transmit to humans through the bites of infective mosquitoes and aware *A. aegypti* are the principal mosquito vector. Regarding the knowledge on mosquito biting time, 170 (82.9%) participants correctly reported that *Aedes* mosquitoes did not bite only during day time while others were not aware. Furthermore, 85.4% said that the rainy season is not the only epidemic season for dengue infection. Of 205 participants, 204 participants recognized old tires, trash cans and flower pots as the breeding sites for *Aedes* mosquitoes because they often have standing water in them. However, 75 (37.1%) of the participants incorrectly believed that *Aedes* mosquito lays its eggs on dirty water while a small proportion (2%) were not able to answer.

Overall 86.8% knew dengue fever is transmitted by the bite of *Aedes* mosquito. This finding was supported by another research conducted by Ho *et al.* in Southern Taiwan.^[8] Regarding knowledge about breeding sites of mosquitoes, 99.5% knew dengue mosquitoes breed in stagnant water. This finding was consistent with a previous study that observed that

93% indicated that stagnant water is the source of mosquito breeding.^[22] However, there was a widespread misconception among 39.1% of respondents that dengue mosquitoes breed in dirty water. About 61% of respondents understood that dengue mosquitoes can breed either in clean or dirty water. This finding was different from the study reported in Itrat *et al.* (2008).^[3]

There was a significant association between knowledge about dengue and attitude toward dengue control and management ($P < 0.001$). Both Wan Rozita *et al.* and Hairi *et al.* also concluded a significant association between knowledge about dengue and attitude toward dengue control and management.^[5,17]

CONCLUSION

It was found that the respondents had adequate knowledge about dengue control and management. The knowledge of dengue and attitude toward dengue control and management was also significantly correlated. Although respondents appeared to have adequate knowledge about dengue infection, there is still a need for CPs to constantly attending training and continuous professional development programs to keep themselves updated by the latest information. Thus, they will be able to relay the right information as well as giving proper counseling to their customers which will then improve dengue control and management in total.

LIMITATIONS OF THE STUDY

There were certain limitations to the present study. There might have been some biases during data collection. This study was conducted in a mid-sized city of Pakistan, and some of the data collection forms were collected back several days later. This was because several respondents were not able to fill up the questionnaires spontaneously. During this period, these respondents might look up for the right answers. Besides, the results of this study could not be generalized, as the data were collected based on the convenience sampling method.

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